REMARKS/ARGUMENTS

This Amendment accompanies a Request for Continued Examination (RCE) and addresses the issues raised in the Official Action of April 21, 2009, a Final Rejection.

Discussion of Amendment to the Claims

Claim 1 has been amended in order to more particularly point out and distinctly claim that which applicants regard as their invention and to direct it to preferred aspects of the disclosure.

Claim 1 is amended in two aspects to specify that the first and second film have a (211) dominant orientation. Basis for this feature can be found in the international publication, page 2, lines 20-27.

Claim 1 is also amended to specify that the first film has been applied to the substrate. Basis for this amendment can be found in original claim 2.

In item 3 of the Official Action, claims 23 and 24 were criticized as depending from a product claim, claim 1. This has been remedied by inserting the information concerning the product directly into claim 23 thus withdrawal of the rejection under 35 USC §112, second paragraph is appropriate.

Responding to item 5, page 3 of the Final Rejection, the subject matter of previous claim 2 requiring the first layer to be in contact with a substrate has been inserted into claim 1. Counsel regrets any confusion that may have been caused by earlier comments to the contrary.

Response to Prior Art-Based Rejections

Claims 1, 3-11 and 20-23 were rejected as being anticipated by a published Japanese application to Yoshimi et al, while claim 24 has been rejected as allegedly being "obvious" over Yoshimi (the same document) in combination with a U.S. patent to Pier plus another reference. As claim 24 depends from what applicants regard as an allowable claim this second rejection is believed to be overcome.

Amended claim 1 is not anticipated by Yoshimi et al. The document of Yoshimi et al rather points away from the present invention by teaching the skilled man to use a dual layer transparent conductive oxide, where the layer closest to the substrate has a lower concentration of electron donor.

This follows e.g. from paragraphs 36 and 37 of Yoshimi et al, in which a first layer

closest to the substrate is a fluorine doped SnO_2 layer (101) with 1.0 mol% fluorine dopant gas and a second layer further away from the substrate is a fluorine doped SnO_2 layer (102) with 1.5 mol% fluorine dopant gas. Moreover, Yoshimi et al are totally silent with respect to crystallographic orientation.

The Examiner further states that it would have been obvious for the skilled man to design a dual layer of transparent conductive oxide, where the layer closest to the substrate has at least 10 percent more electron donor, in view of Pier et al and Campbell et al.

Pier et al teach a combination of at least two transparent conductor layers, where one layer is designed primarily to maximize the optical properties of the conductor and at least a second layer is designed to maximize the electrical properties thereof. Pier et al, however, also point away from the present invention by teaching the skilled man to use a dual layer transparent conductive oxide, where the layer closest to the substrate has a lower concentration of electron donor (e.g. Pier et al, column 9, lines 50-53; column 10, lines 13-16; and column 11, lines 60-65). In addition, Pier et al are totally silent with respect to crystallographic orientation.

The skilled man would further not be inclined to combine the teachings of either Yoshimi et al or Pier et al with those of Campbell et al, because Campbell et al do not relate to multiple layers of transparent conductive oxide applied on top of each other, let alone transparent conductive oxide layers doped with an electron donor. Instead, the publication of Campbell et al concerns a polycrystalline p-n junction. Campbell et al do not even suggest using a doped transparent oxide layer, and are silent with respect to crystallographic orientation.

The present invention is concerned with combining advantageous properties for an electrode to be used in a solar cell, including high transparency of the electrode for the incident light, good electrical conduction of the current generated in the active layer, and capture of the incident light in the solar cell.

In order to efficiently capture the incident light it is desirable to have a very specific crystallographic morphology, which gives rise to multiple internal reflections. Such layers, however, normally have a bad conductivity. The inventors found that an electrode with both good electrical conductivity and optimal surface morphology can be obtained by using a coating as presently claimed.

First of all, the inventors surprisingly found that a dominant (211) crystallographic

orientation of the transparent conductive oxide film is at least as good in terms of capture of incident light than the conventional (200) orientation as taught e.g. in JP-A-05 067 797.

Moreover it was surprisingly found that when the layer closest to the substrate has an elevated electron donor content and a (211) crystallographic orientation, this desirable (211) orientation is taken over by a next film which is applied on top of this first film, even when the film would normally not yield a dominant (211) orientation.

None of the cited prior art documents even suggests a (211) crystallographic orientation, let alone that a (211) crystallographic orientation of a first layer can be adopted by a subsequent layer.

Accordingly, the present invention is not rendered obvious by the cited prior art.

For the above reasons it is respectfully submitted that all pending and elected claims of the present application define patentable subject matter. Reconsideration and favorable action are solicited. Should the examiner require further information, please contact the undersigned.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: ____________________
Arthur R. Crawford
Reg. No. 25,327

ARC:eaw
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100